

# Identification of Gamma Transitions in $^{147}\text{Ba}$ , $^{149}\text{Ce}$ , and $^{151,153}\text{Nd}$

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Prompt  $\gamma$ -rays from the fission fragments of  $^{252}\text{Cf}$  spontaneous fission were investigated in Gammasphere by the GANDS95 collaboration [1]. Data presented here were analyzed mainly by Vanderbilt University members of the collaboration. The results were published in ref. [1].

Gamma-ray transitions in  $^{147}\text{Ba}$ ,  $^{149}\text{Ce}$ , and  $^{151,153}\text{Nd}$  have been identified from gamma-gamma, gamma-gamma, x-gamma, and x-gamma-gamma coincidence studies. The yrast positive parity band in  $^{149}\text{Ce}$  is assigned to an  $i_{13/2}$  neutron favored signature, the yrast negative parity band in  $^{149}\text{Ce}$  is assigned a  $h_{9/2}$  proton favored signature. The positive parity band in  $^{151}\text{Nd}$  corresponds to the positive parity band in  $^{149}\text{Ce}$ , the negative parity band in  $^{153}\text{Nd}$  corresponds to the negative parity bands of  $^{149}\text{Ce}$  and  $^{161}\text{Er}$ . The band observed in  $^{147}\text{Ba}$  is built on the  $h_{9/2}$  orbital. These bands have some very specific features. At  $I < j$  they look like normal strongly coupled bands (if  $k \geq 5/2$ ) or disturbed bands (if  $k < 5/2$ ). But at  $I \geq j$  they become typical strongly aligned bands with  $\Delta I = 2$  sequence. These aligned parts of  $i_{13/2}$  and  $h_{9/2}$  bands are easy to recognize and are in fact the most distinctive structures of  $N = 91, 93$  neutron-deficient nuclei. The kinetic moments-of-inertia (shown in Figure 1) in these isotopes are remarkably similar which supports the configuration assignments.

## References

- [1] For GANDS95 list of authors and institutions, and additional results of this work, see

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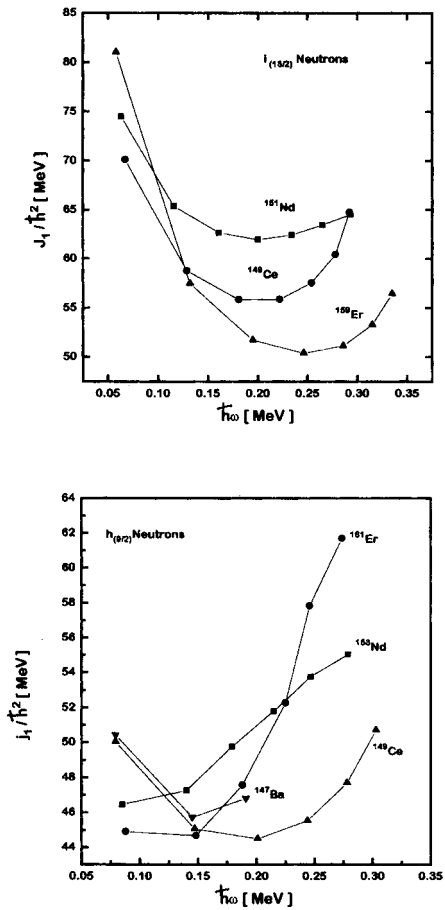


Fig. 1. Kinetic moment-of-inertia plots for  $i_{13/2}$  and  $h_{9/2}$  bands in Ba, Ce, Nd, and Er nuclei.